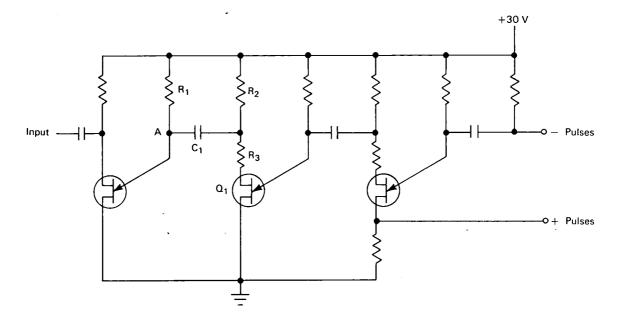
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NASA TECH BRIEF



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Unijunction Frequency Divider Is Free of Backward Loading



The problem: Present unijunction frequency dividers have a tendency toward loading in the backward direction. This causes undesirable triggering of preceding stages.

The solution: A simple frequency divider using unijunction transistors has few elements per stage and reduces backward loading to a minimum.

How it's done: Each stage in the frequency divider is a relaxation oscillator. The capacitor C₁ quickly charges through R2 and slowly discharges through R₁ and R₂. The charging current through R₂ lowers the voltage at point A and may cause the next stage to fire. However, the larger value of R₃ keeps the current through the base of Q₁ low so that the size of the pulse generated in R₂ is kept so low that one stage will not trigger a preceding stage. Thus the circuit reduces loading of each stage by feeding each output into a low impedance loop. At the same time, backward loading is reduced since the synchronization signal of each stage is picked up by a high impedance loop in the following stage. This high impedance loop results in low currents which do not create appreciable sync voltages in the preceding stage.

Notes:

1. Circuits of this design should find application in timing devices and in sync generators for television systems.

(continued overleaf)

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Technology Utilization Officer Jet Propulsion Laboratory 4800 Oak Grove Drive Pasadena, California, 91103 Reference: B65-10112 Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: Avard F. Fairbanks

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